

AMENDMENTS TO THE CLAIMS

1. (currently amended): A process for producing an aldehyde derivative of a reducing terminal sialic acid ~~in which a starting material which is of a di-, oligo- or poly-saccharide having a sialic acid unit at the reducing terminal and a terminal saccharide at the~~ that has a non-reducing end which has terminal saccharide that contains a vicinal diol group, is subjected to the sequential steps of which process comprises:

a) ~~preliminary selective oxidation to oxidise the~~ oxidizing said vicinal diol group of the non-reducing terminal saccharide to an aldehyde;

b) ~~reduction to reductively open the ring at the~~ reducing the reducing terminal sialic acid unit and the aldehyde formed in a) to effect ring opening of the reducing terminal sialic acid, whereby a vicinal diol group is formed [[,]] at the reducing terminal sialic acid and ~~wherein the aldehyde formed in step a) is also reduced to form a hydroxy group which is not part of a vicinal diol group; and~~

c) ~~selective oxidation to oxidise~~ oxidizing the vicinal diol group formed in step b) ~~to form~~ to obtain a product comprising an aldehyde group at the reducing terminal.

2. (currently amended): ~~A process according to~~ The process of claim 1 ~~in which the sialic acid unit at~~ wherein the reducing terminal is sialic acid ~~joined to the adjacent sialic acid unit saccharide through the 8 carbon atom whereby in step b) the 6,7 vicinal diol group is oxidised to form an aldehyde on the carbon 7 atom.~~

3. (currently amended): ~~A process according to~~ The process of claim 1 ~~in which~~ wherein the saccharide unit at the non-reducing end is a sialic acid unit.

4. (canceled)

5. (currently amended): ~~A process according to~~ The process of claim 1 ~~in which~~ wherein the polysaccharide is a polysialic acid consisting ~~substantially only of units of sialic acid units.~~

6. (currently amended): ~~A process according to~~ The process of claim 5 in which wherein the polysaccharide has at least 5 sialic acid units.

7. (currently amended): ~~A process according to~~ The process of claim 1 in which the said preliminary selective oxidation wherein step a) is carried out under conditions such that there is substantially no that do not result in mid-chain cleavage of the polysaccharide.

8. (currently amended): ~~A process according to~~ The process of claim 7 in which the said preliminary selective oxidation wherein step a) is carried out in aqueous solution in the presence of periodate at a concentration in the range 1mM to 1M, a pH in the range 3 to 10, a temperature in the range 0 to 60°C and a time in the range 1 min to 48 hours.

9. (currently amended): ~~A process according to~~ The process of claim 1 in which wherein step b) is carried out under conditions such that pendent carboxyl groups on the starting material are not reduced.

10. (currently amended): ~~A process according to~~ The process of claim 9 in which step b) is carried out in aqueous solution in the presence of borohydride at a concentration in the range 1µM to 0.1M, a pH in the range 6.5 to 10, a temperature in the range 0 to 60°C and a period in the range 1 min to 48 h.

11. (currently amended): ~~[[A]] The process for producing a derivatised substrate in which the process of claim 1 which further comprises is carried out and then the said aldehyde derivative is reacted~~ reacting the product of step c) with a substrate having a primary amine group or a hydrazide group whereby the aldehyde group reacts with the primary amine or hydrazide group to form a conjugate product, comprising a C=N bond.

12. (currently amended): ~~A process according to~~ The process of claim 11 in which the product is reduced which further comprises reducing the C=N bond to a C—N bond.

13. (currently amended): ~~A process according to~~ The process of claim 11 in which wherein the substrate is a peptide or a protein.

14. (currently amended): ~~A process according to~~ The process of claim 13 in which wherein the substrate is a peptide therapeutic.

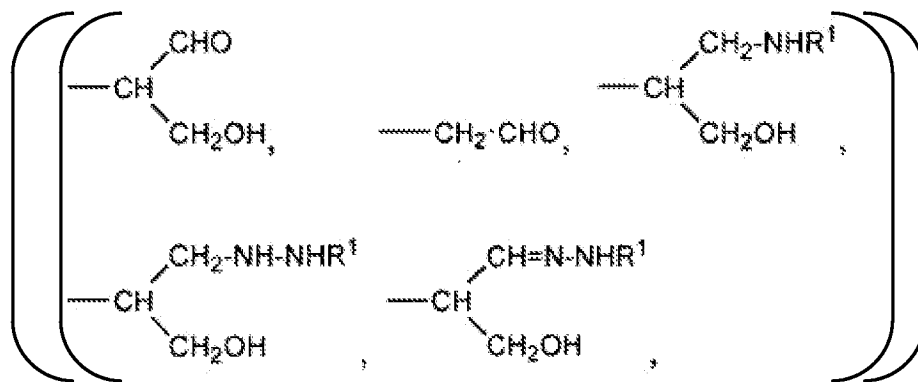
15. (currently amended): ~~A process according to~~ The process of claim 11 in which wherein the substrate is a compound having a comprises an additional functional group substituent and a dibasic organic group joining linked through a divalent linker to the amine or hydrazide group and the functional group.

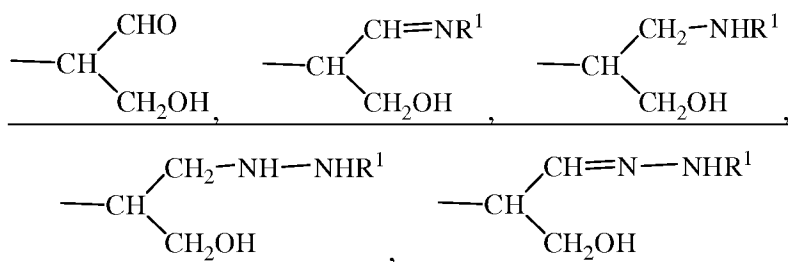
16. (canceled)

17. (currently amended): ~~A process according to~~ The process of claim 11 in which wherein the substrate is a drug delivery system, a cell, a virus or a synthetic polymer.

18. (currently amended): ~~A compound which is an aldehyde derivative of a di-, oligo or polysaccharide comprising at least one sialic acid unit, and having two terminal units corresponding to the reducing and non-reducing terminal units of a polysaccharide in which the terminal unit at the reducing end includes an aldehyde moiety or is a group OR, in which R is selected from having a sialic acid residue at the reducing terminus,~~

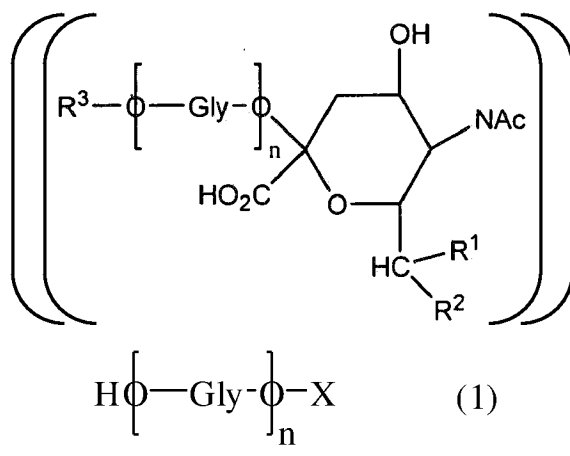
wherein said sialic acid at the reducing terminus has been converted to OX wherein X is



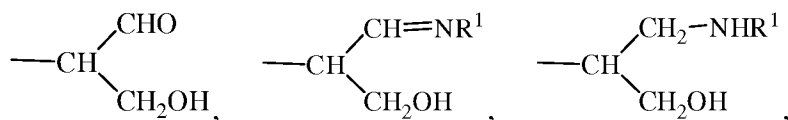


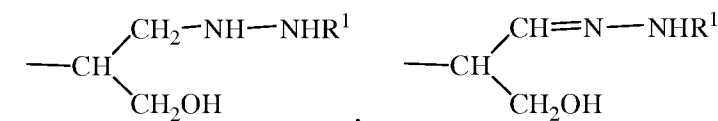
CH₂CHO, CH₂CHNR¹, -CH₂CH₂NHR¹, CH₂CH=N-NHR¹ [[and]] or CH₂CH₂NHNHR¹ in which R¹ is H, C₁₋₂₄-alkyl, aryl C₂₋₆-alkanoyl, or a polypeptide or a protein linked through the N terminal or the γ-amine group of a lysine residue thereof, a drug delivery system or is an organic group having a functional substituent adapted for reaction with a sulfhydryl group, and [[which]] wherein said di-, oligo-, or polysaccharide has a passivated unit at the non-reducing terminal unit.

19. (currently amended): ~~A compound according to~~ The compound of claim 18 which has general of the formula [[I]]



~~in which R³ is H and R⁴ is OH wherein n is 1 or an integer, each GlyO is a glycosyl group which may be the same or different, n is an integer of 1 or more and R is as defined in claim 18 and~~ X is





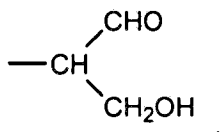
CH₂CHO, CH₂CHNR¹, -CH₂CH₂NHR¹, CH₂CH=N-NHR¹ or CH₂CH₂NHNHR¹ wherein R¹ is as defined in claim 18.

20. (currently amended): ~~A compound according to~~ The compound of claim 19 in ~~which~~ wherein substantially all the GlyO groups are sialic acid groups, joined 2-8, 2-9 or alternating 2-8/2-9, to one another.

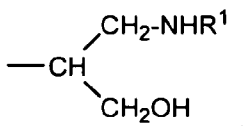
21. (currently amended): ~~A compound according to~~ The compound of claim 20 in ~~which~~ wherein n is at least 5.

22. (currently amended): ~~A compound according to~~ The compound of claim 18 in ~~which~~ wherein R¹ is a protein or peptide or a drug delivery system.

23. (currently amended): ~~A compound according to~~ The compound of claim 18 in ~~which R~~ wherein X is

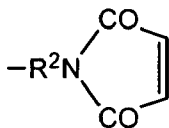


24. (currently amended): ~~A compound according to~~ The compound of claim 18 ~~in which R~~ wherein X is



25. (currently amended): ~~A compound according to~~ The compound of claim 21 or claim 24 ~~in which~~ wherein R¹ is a peptide or protein therapeutic.

26. (currently amended): ~~A compound according to~~ The compound of claim 18
~~in which~~ wherein R^1 is a group



~~in which~~ wherein R^2 is a ~~C_{2-12} -alkanediy~~ C_{2-12} -alkylene group.

27. (currently amended): A composition comprising a compound ~~according to~~
of claim 18 and a diluent.

28. (currently amended): A pharmaceutical composition comprising a compound
~~according to~~ of claim 21 or claim 25 and a pharmaceutically acceptable excipient.